What is claimed is:

1. An oxygen concentration detector comprising:

a sensor element including a solid electrolyte and external and internal electrodes provided on external and internal surfaces thereof, respectively;

a heater provided adjacent to said internal surface of said sensor element; and

a high-emissivity layer formed by a material having a high emissivity is provided on at least one of said internal surface of said sensor element and the surface of said heater;

wherein said high-emissivity layer provided on said internal surface of said sensor element has an emissivity of 0.3 or more, and said high-emissivity layer provided on said surface of said heater is 0.6 or more.

2. An oxygen concentration detector according to claim 1, wherein said high-emissivity layer provided on said internal surface of said sensor element consists of one or more materials selected from a group consisting of alumina, titanium oxide, zirconium oxide, iron (III) oxide, nickel oxide, manganese oxide, copper oxide, cobalt oxide, chromium oxide, yttrium oxide, cordierite, silicon nitride, aluminum nitride, and silicon carbide.

3. An oxygen concentration detector according to

claim 1, wherein said high-emissivity layer provided on said surface of said heater consists of one or more materials selected from a group consisting of iron (III) oxide, nickel oxide, manganese oxide, copper oxide, cobalt oxide, chromium oxide, silicon nitride, aluminum nitride, and silicon carbide.

4. An oxygen concentration ~~detector~~ according to claim 1, wherein a surface roughness of said high-emissivity layer is 1 μm or more.

5. An oxygen concentration detector according to claim 1, wherein said heater has a polygonal cross-section.

6. An oxygen concentration detector comprising:

a sensor element including a solid electrolyte and an external electrodes provided on an external surface thereof;

a heater provided adjacent to an internal surface of said sensor element; and

an electrode containing a material having a high emissivity is provided on said internal surface of said sensor element;

wherein said electrode provided on said internal surface of said sensor element has an emissivity of 0.3 or more.

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7. An oxygen concentration detector according to claim 6, wherein said material having a high emissivity contained in said electrode provided on said internal surface of said sensor element consists of one or more materials selected from a group consisting of alumina, titanium oxide, zirconium oxide, iron (III) oxide, nickel oxide, manganese oxide, copper oxide, cobalt oxide, chromium oxide, yttrium oxide, cordierite, silicon nitride, aluminum nitride, and silicon carbide.

8. An oxygen concentration detector according to claim 6, wherein said surface roughness of said high-emissivity layer is 1 μm or more.

9. An oxygen concentration detector comprising:

a sensor element including a solid electrolyte and external and internal electrodes provided on external and internal surfaces thereof, respectively;

a heater provided adjacent to said internal surface of said sensor element;

wherein said heater consists of one or more materials selected from a group consisting of silicon nitride, ~~aluminum~~ nitride, and ~~silicon nitride~~.

10. An oxygen concentration detector according to claim 9, wherein said heater has a polygonal cross-section.

11. ~~An oxygen concentration detector~~ according to claim 9, wherein said material having high emissivity has an emissivity of 0.6 or more.

12. An oxygen concentration detector comprising:

a sensor element including a solid electrolyte and external and internal electrodes provided on external and internal surfaces thereof, respectively;

a heater provided adjacent to said internal surface of said sensor element;

wherein said internal electrode consists of a material having a high emissivity, and said external electrode consists of a material having an emissivity lower than the emissivity of said internal electrode.

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13. An oxygen concentration detector according to claim 12, wherein said internal electrode consists of platinum black and ruthenium oxide.

14. An oxygen concentration detector according to claim 12, wherein said surface of said internal electrode facing to said external electrode consists of a material having an emissivity higher than the emissivity of ~~said external electrode.~~

15. An oxygen concentration detector according to claim 12, wherein said material having a high emissivity has an emissivity of 0.3 or more.

16. An oxygen concentration detector comprising:

a sensor element including a solid electrolyte and external and internal electrodes provided on external and internal surfaces thereof, respectively;

a heater provided adjacent to an internal surface of said sensor element;

wherein at least said surface of said internal electrode consists of a material having a high emissivity, and a layer consisting of a material having an emissivity lower than the emissivity of said internal electrode is provided as an outermost layer of said sensor element.

17. An oxygen concentration detector according to claim 16, wherein said material having a high emissivity has an emissivity of 0.3 or more.